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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/710,163	11/10/2000	Rajeev Shorey	JP920000215US1	4589

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EXAMINER	
PATEL, HARESH N	
ART UNIT	**PAPER NUMBER**
2154	5

DATE MAILED: 03/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/710,163	SHOREY ET AL.	
	Examiner	Art Unit	
	Haresh Patel	2154	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2000*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-36 are presented for examination.

Information Disclosure Statement

2. An initialed and dated copy of Applicant's IDS form 1449, Paper No. 4, is attached to the instant Office action.

Specification

3. The disclosure is objected. Some of the informalities are:

i. All the known prior art contents from the "DETAILED DESCRIPTION OF THE INVENTION" section needs to be moved into the "Description of Related Art" sub-section of the "BACKGROUND OF THE INVENTION" section. See submitted IDS, paper number 4.

Appropriate correction is required.

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Method and Congestion Control System to allocate bandwidth of a link to dataflows depending upon their respective weighted values using multiple buckets with constant number of tokens".

Drawings

5. Figure 17 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See submitted IDS, paper number 4. See MPEP § 608.02(g). A proposed

drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

Claims 1, 13 and 25 recite the terms "the number of buckets", "the number of active dataflows", "reallocating tokens", "one or more buckets". There is insufficient antecedent basis for these limitations in the claims. Also these claims do not clearly define buckets.

Claims 2, 14 and 26 recite the terms "the adaptive adjusting", "the token-carrying capacity". There is insufficient antecedent basis for these limitations in the claims. Also these claims do not clearly define buckets.

Claim Objections

6. Claims 11, 12, 23, 24, 30, 31 are objected to because of the following informalities:

Dependent Claims: Any claim which includes all the features of one or more other claims (claim in dependent form, hereinafter referred to as "dependent claim") shall do so by a reference, if possible at the beginning, to the other claim or claims and shall then state the additional features claimed. Any dependent claim which refers to more than one other claim

("multiple dependent claim") shall refer to such claims in the alternative only. Multiple dependent claims shall not serve as a basis for any other multiple dependent claim. Where the national law of the national Office acting as International Searching Authority does not allow multiple dependent claims to be drafted in a manner different from that provided for in the preceding two sentences, failure to use that manner of claiming may result in an indication under Article 17(2)(b) in the international search report. Failure to use the said manner of claiming shall have no effect in a designated State if the manner of claiming actually used satisfies the national law of that State.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1, 13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amaral et al. 6,088,360 (Hereinafter Amaral) in view of Bonomi et. al. 6,396,834 (Hereinafter Bonomi).

9. As per claims 1, 13 and 25, Amaral teaches the following:

a method of allocating bandwidth of a limited bandwidth link to dataflows containing packets, including the steps of,

a system for allocating bandwidth of a limited bandwidth link to dataflows containing packets, including,

a computer program product including a computer readable medium with a computer program recorded therein for allocating bandwidth of a limited bandwidth link to dataflows containing packets, including:

the number of buckets dependent upon the number of active dataflows (e.g., Varying the capacity of the token buckets 68, as needed is another way to allocate bandwidth to each channel by selecting a maximum bus 52 access time for a channel, figure 2, col., 1, line 58 - col., 6, line 46, bandwidth allocation may be performed dynamically as needed by the various channels. Thus, the use of these tokens and counters 62 sets a maximum bandwidth per channel, and its advantages are utilized when there is not enough total bandwidth in the video processor 10 or not enough buffer memory network to accommodate all the channels), where each bucket has a number of tokens allocated to said bucket for use by the corresponding dataflow (e.g., tokens assigned for each channel, figure 2, col., 1, line 58 - col., 6, line 46), said number of tokens dependent upon a weighted value for said corresponding dataflow (e.g., The bandwidth allocation for a channel is either preselected by the video provider or automatically selected, and tokens are issued by a counter associated with each channel to give greater network access to those channels which require a higher bandwidth. A token multiplier detects the bandwidth needs of the various channels by detecting the rate that the FIFO buffer is being filled and automatically multiplies the number of consecutive packets which the packetizer may transmit over the multiplexer during a single grant, abstract),

wherein queueing of said packets for utilization of said limited bandwidth link is dependent upon said tokens (e.g., if no token has issued, the channel must wait until a token has been issued, col., 6, line 1 – col., 8, line 5); and

adaptively reallocating tokens to one or more buckets in accordance with a weighted value for each of said dataflows (e.g., the bandwidth allocation for a channel is either preselected by the video provider or automatically selected, and tokens are issued by a counter associated with each channel to give greater network access to those channels which require a higher bandwidth, col., 1, line 10 – col.,2, line 23).

However, Amaral does not specifically mention about adaptively adjusting the number of buckets.

Bonomi teaches the following:

adaptively adjusting the number of buckets (e.g., Even though only three groups and a few buckets in each groups are shown here for conciseness, a typical port may have several associated groups and several buckets within each group, For a group serving non-shaped connections, fairness is achieved by associating a bucket gap, which is inversely proportional to the desired bandwidth of a connection or proportional to the average intercell arrival time of the connection. When a cell of a connection is scheduled for transmission, the next cell in the connection is placed a number of buckets equal to the bucket gap away from the current bucket. A current bucket may be defined as a bucket from which cells are considered presently for transmission. Cells in a next bucket are considered for transmission only after transmitting all cells in a current bucket. Cells within a bucket can be transmitted in a FIFO scheme, col., 3, line 30 – col., 11, line 51).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Amaral with the teachings of Bonomi in order to facilitate one bucket allocated to each queue to handle the packets. The number of transmitting frames changes periodically and the number of current buckets also changes depending upon the current number of transmitting frames, as suggested by Bonomi.

10. Claims 2-4, 8-12, 20-24, 32-36, are rejected under 35 U.S.C. 103(a) as being unpatentable over Amaral, Bonomi in view of "Official Notice".

11. As per claims 2-4, 14-16, 26-28, the claims are rejected for the same reasons as claims 1, 13 and 25 above.

However Amaral and Bonomi do not specifically mention about adding or deleting a bucket. "Official Notice" is taken that both the concept and advantages of providing addition and deletion of the buckets is well known and expected in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include addition and deletion of the buckets with the teachings of Amaral and Bonomi in order to facilitate keeping the number of buckets equal to the number of current channels. Removing the unnecessary bucket would help release allocated memory and adding the necessary bucket would help handle the new channel data packets. The allocation of the tokens for the unused or deleted buckets is assigned to other buckets, as suggested by the teaching of Amaral and Bonomi.

12. As per claims 8, 20, 32, Amaral teaches the following:

two dataflows contain heterogeneous dataflows (e.g., multiple channel containing audio and video data stream, col., 3, line 30 – col., 5, line 50).

13. As per claims 9-10, 21-22, 33-34, the claims are rejected for the same reasons as claims 1, 2, 13, 14, 25 and 26 above.

However Amaral and Bonomi do not specifically mention about minor details of various dataflows. "Official Notice" is taken that both the concept and advantages of providing support for various dataflows is well known and expected in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include heterogeneous dataflows and aggregated two dataflows with the teachings of Amaral and Bonomi in order to facilitate allocating the bandwidth of the communication link to any type of the dataflows.

14. As per claims 11-12, 23-24, 35-36, Amaral and Bonomi do not specifically mention about the rate of transmission of the packets across said limited bandwidth link is unaffected and the total number of the tokens is conserved. "Official Notice" is taken that both the concept and advantages of providing a method to not affect the bandwidth of the link and conserved number of tokens is well known and expected in the art.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a method to not affect the bandwidth of the link with the teachings of Amaral and Bonomi in order to facilitate a mechanism to allocate the bandwidth of the link

without reducing the bandwidth of the link using conserved number of tokens. This would help maintain the bandwidth of the transmission link using the predetermined number of tokens.

15. Claims 5-7, 17-19, 29-31, are rejected under 35 U.S.C. 103(a) as being unpatentable over Amaral, Bonomi in view of Garcia et al. US Publication number 2002/0097726, July 25, 2002 (Hereinafter Garcia).

16. As per claims 5, 17, 29, the claims are rejected for the same reasons as claims 1, 13 and 25 above.

Amaral and Bonomi do not specifically mention about number of tokens dependent upon the size of a packet.

Garcia teaches the following:

the number of tokens dependent upon the size of a packet (e.g., The overhead is determined by the packet size, wherein the smaller the packets greater the overhead. This provides a disincentive for the use of small packets, col., 13, paragraph 138 – col., 14, paragraph 178).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Amaral and Bonomi with the teachings of Garcia in order to facilitate considering the size of the packets for allocating the bandwidth of the link to the current channels. The motivation would be obvious because considering the packet size would help allocate bandwidth of the link in a fair manner among the active channels, as suggested by Garcia.

17. As per claims 6-7, 17-19, 30-31, the claims are rejected for the same reasons as claims 1, 13 and 25 above.

Amaral teaches packets of diverse dataflows in a single queue (e.g., channel containing audio and video data stream, col., 3, line 30 – col., 5, line 50).

However, Amaral do not specifically mention about dropping the packets.

Bonomi teaches the following:

dropping one or more received packets of a dataflow when the bucket corresponding to said dataflow has insufficient tokens for queueing of said one or more packets (e.g., Such waiting in an intermediate switch of a connection path provides for efficient transmission of frames on ATM networks because the buffering requirements in subsequent switches in the connection path may be minimized. In addition, the drop policy may be simplified because all cells can be dropped if desired, col., 4, line 6 – col., 6, line 56).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Amaral with the teachings of Bonomi in order to facilitate minimized buffering of the channels at the bandwidth allocating device. The dropping of packets would eliminate longer queues at the bandwidth-allocating device, as suggested by Bonomi.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Haresh Patel whose telephone number is (703) 605-5234. The examiner can normally be reached on Monday, Tuesday, Thursday and Friday from 10:00 am to 8:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee, can be reached at (703) 305-8498.

The appropriate fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Haresh Patel

February 20, 2004.

JOHN FOLLANSBEE
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